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DATE: February 1, 2005

PTO IDENTIFIER: Application Number 10/708,339-Conf. #2338
Patent Number

Inventor: Takeshi Ikeda et al.

MESSAGE TO: USPTO: MS APPEAL BRIEF-PATENTS

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PAGES (Including Cover Sheet): 16

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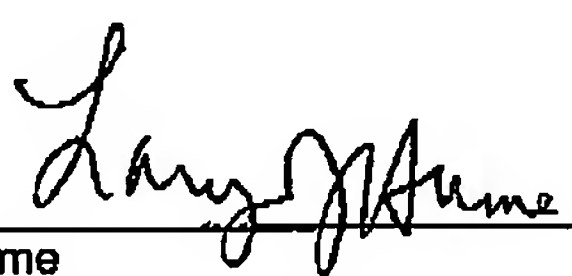
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TRANSMITTAL OF APPEAL BRIEF			Docket No. 22040-00016-US2
In re Application of: Takeshi Ikeda et al.			
Application No. 10/708,339-Conf. #2338	Filing Date February 25, 2004	Examiner H. Choe	Group Art Unit 2817
Invention: AMPLIFIER CIRCUIT FOR AM BROADCASTING			
<p style="text-align: center;"><u>TO THE COMMISSIONER OF PATENTS:</u></p> <p>Transmitted herewith is the Appeal Brief in this application, with respect to the Notice of Appeal filed: <u>December 9, 2004</u>.</p> <p>The fee for filing this Appeal Brief is <u>\$ 250.00</u>.</p> <p><input type="checkbox"/> Large Entity <input checked="" type="checkbox"/> Small Entity</p> <p><input type="checkbox"/> A petition for extension of time is also enclosed. The fee for the extension of time is _____.</p> <p><input type="checkbox"/> A check in the amount of _____ is enclosed.</p> <p><input checked="" type="checkbox"/> Charge the amount of the fee to Deposit Account No. <u>22-0185</u>. This sheet is submitted in duplicate.</p> <p><input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.</p> <p><input checked="" type="checkbox"/> The Director is hereby authorized to charge any additional fees that may be required or credit any overpayment to Deposit Account No. <u>22-0185</u>. This sheet is submitted in duplicate.</p> <div style="text-align: center;"> _____ Larry J. Hume Attorney Reg. No. : 44,163 CONNOLLY BOVE LODGE & HUTZ LLP 1990 M Street, N.W., Suite 800 Washington, DC 20036-3425 (202) 331-7111</div> <div style="text-align: right;">Dated: <u>February 1, 2005</u></div>			

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Effective on 12/08/2004. Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4518). FEE TRANSMITTAL For FY 2005		Complete if Known Application Number 10/708,339-Conf. #2338 Filing Date February 25, 2004 First Named Inventor Takeshi Ikeda Examiner Name H. Choe Art Unit 2817 Attorney Docket No. 22040-00016-US2	
<input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27			
TOTAL AMOUNT OF PAYMENT	(\$)	250.00	

METHOD OF PAYMENT (check all that apply)

<input type="checkbox"/> Check	<input type="checkbox"/> Credit Card	<input type="checkbox"/> Money Order	<input type="checkbox"/> None	<input type="checkbox"/> Other (please identify): _____
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FEE CALCULATION**1. BASIC FILING, SEARCH, AND EXAMINATION FEES**

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fees Paid (\$)
	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Fee (\$)	Small Entity Fee (\$)
Each claim over 20 (including Reissues)	50	25
Each independent claim over 3 (including Reissues)	200	100
Multiple dependent claims	360	180

Total Claims	Extra Claims	Fee (\$)	Fee Paid (\$)
_____	_____ x _____	_____	_____

Multiple Dependent Claims	
Fee (\$)	Fee Paid (\$)
_____	_____

Indep. Claims	Extra Claims	Fee (\$)	Fee Paid (\$)
_____	_____ x _____	_____	_____

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee (\$)	Fee Paid (\$)
_____ - 100 = _____	_____ / 50	_____ (round up to a whole number) x _____	_____	_____

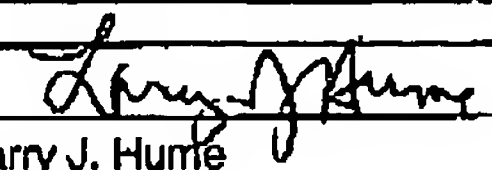
4. OTHER FEE(S)

Non-English Specification, \$130 fee (no small entity discount)

Other (e.g., late filing surcharge): 2402 Filing a brief in support of an appeal

Fees Paid (\$)

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SUBMITTED BY			
Signature		Registration No. (Attorney/Agent)	44,163
Name (Print/Type)	Larry J. Humie	Telephone	(202) 331-7111
		Date	February 1, 2005

**RECEIVED
CENTRAL FAX CENTER****FEB 01 2005**Docket No.: 22040-00016-US2
(PATENT)**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of:
Takeshi Ikeda et al.

Confirmation No.: 2338

Application No.: 10/708,339

Filed: February 25, 2004

Art Unit: 2817

For: AMPLIFIER CIRCUIT FOR AM
BROADCASTING

Examiner: H. Choe

APPEAL BRIEF**MS APPEAL BRIEF-PATENTS****February 1, 2005**

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Dear Sir:

As required under § 41.37(a), this brief is filed within two months of the Notice of Appeal filed in this case on December 9, 2004, and is in furtherance of the Notice of Appeal.

The fees required under § 41.20(b)(2), and any required petition for extension of time for filing this brief and fees therefor, are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief contains items under the following headings as required by 37 C.F.R. § 41.37 and M.P.E.P. § 1206:

- I. Real Party In Interest
- II. Related Appeals and Interferences
- III. Status of Claims

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IV. Status of Amendments

V. Summary of Claimed Subject Matter

VI. Grounds of Rejection to be Reviewed on Appeal

VII. Arguments

App. A: Claims Involved in the Appeal

I. REAL PARTY IN INTEREST:

The real party in interest for this appeal is: Niigata Seimitsu Co., Ltd, Niigata, Japan.

II. RELATED APPEALS, INTERFERENCES

There are no other appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

A. Total Number of Claims in Application: There are 4 claims pending.

B. Claims Pending: Claims 1-4 now pending in this application.

C. Claims canceled: None

D. Claims withdrawn from consideration but not canceled: None

E. Claims allowed: None

F. Claims rejected: 1-4.

G. Claims On Appeal: The claims on appeal are claims 1-4.

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IV. STATUS OF AMENDMENTS

Appellants have not amended the originally filed claims in this continuation application, and have not filed any amendment after final rejection.

Accordingly, the claims enclosed herein as Appendix A are the originally-filed claims.

V. SUMMARY OF CLAIMED SUBJECT MATTER**A. Introduction**

A concise explanation of the subject matter defined in independent claim 1 involved in the appeal is provided below. Since this application was electronically filed, reference is made to the specification paragraph number, and to the drawing reference characters, and not to specification page and line number, which have no particular relevance to this application.

Further, each means plus function limitation has been identified, with the structure, material, or acts described in the specification corresponding to each claimed function also being specifically identified.

B. Summary of Independent Claim 1

Claim 1: "An amplifier circuit suitable for amplifying an AM broadcast signal, the circuit comprising: FET means for amplifying the AM broadcast signal and reducing a flicker noise level in the amplifier below an N-MOS transistor equivalent flicker noise; and a tuning circuit operatively connected between the FET means and an output node of the amplifier circuit."

The claimed invention is an amplifier circuit suitable for amplifying an AM broadcast signal (See specification at ¶¶ [0003]; [0013]; [0014]; [0031]; [0042]; and Fig. 2).

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The amplifier circuit includes FET means for amplifying the AM broadcast signal (See ¶¶ [0014] through [0016]; [0026]; [0028]; [0032] through [0033]; and Fig. 2, P-channel MOSFET transistors 4 and 5).

A flicker noise level in the amplifier is reduced by the FET amplifier means (transistors 4 and/or 5) below an N-MOS transistor equivalent flicker noise. (See specification at ¶¶ [0036] through [0037], [0039] through [0040]; and Fig. 3, comparison of N-MOS and P-MOS flicker noise level as a function of frequency band).

Tuning circuit 6 is operatively connected between the FET means and an output node of the amplifier circuit. (See specification at ¶¶ [0016] through [0017]; [0026]; [0030] through [0031]; and [0034], and tuning circuit 6 in Fig. 2).

The FET means for amplifying the AM broadcast signal and reducing a flicker noise level in the amplifier comprises P-MOSFETs 4 and 5.

VI. GROUNDS OF REJECTION TO BE REVIEWED UPON APPEAL

A. UNPATENTABILITY OF CLAIMS 1-4 OVER SECHI (FIG. 3)

VII. ARGUMENTS

Claims 1-4 have been improperly rejected under 35 U.S.C. §103(a) as being unpatentable over Sechi (US 4,409,557) Fig. 3. The Examiner has not made out a *prima facie* case of unpatentability, as the motivation to modify the single reference (Sechi) is based solely upon impermissible hindsight.

A. Legal Requirements for Unpatentability

At the outset, Appellants note that, to establish a *prima facie* case of obviousness under 35 U.S.C. §103(a), three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of

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ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference must teach or suggest all the claim limitations.¹ Further, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure.²

B. Deficiencies of Sechi

The applied art does not teach or suggest an amplifier circuit suitable for amplifying an AM broadcast signal which includes, among other features, "FET means for amplifying the AM broadcast signal and reducing a flicker noise level in the amplifier below an N-MOS transistor equivalent flicker noise," as recited in independent claim 1.

Figure 3 of Sechi (applied in the rejection) teaches bandpass filter 10 with an active element to produce a high Q for use in various electronic warfare systems operating in the range of, for example, 10 GHz or higher (see col. 3, line 40 and col. 4, line 45).

In the final official action, the Examiner offers "tuning circuit 33" (more correctly believed to be "tunable resonator" 32) as being "designed to reduce the nois[e] generated by amplifier 21a and 21b," and further asserts that "it requires only routine skill in the art to replace the bipolar transistors with the p-type MOSFETs." Appellants respectfully disagree with both assertions.

Actually, NPN bipolar transistors 21a and 21b (and FETs 20a and 20b in other embodiments) are identified in Sechi as being "negative resistance means" which are connected in cascade to offset the undesirable (positive) resistance of resonator circuit 32. (See Sechi at Abstract, at col. 1, lines 48-68, and at col. 3, lines 54-56).

Sechi is silent on "reducing noise" of any of the active elements, whether noise from dual gate FET 20, the combination of FETs 20a and 20b (FIG. 1), or from the combination of NPN

¹ See MPEP §2143.

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bipolar transistors 21a and 21b. Sechi is even further silent on any recognition of 1/f "flicker noise" problems, which is a problem at AM broadcast frequencies, as discussed in Appellants' disclosure, and as solved by Appellants' claimed invention.

Appellants submit that the reason that Sechi is silent on flicker noise is that this phenomenon is not present at the frequencies of interest in Sechi, and is only of concern in applications at lower frequencies, e.g., AM broadcast band amplification, as in Appellants' claimed invention.

C. Rejections are Based upon Impermissible Hindsight

The Examiner has cited no art which supports his assertion that it would be obvious to replace the bipolar transistors with the p-type MOSFETs at the AM broadcast frequencies involved with the claims on appeal. The Examiner's assertion cited above and rejections appear to be the product of impermissible hindsight, based upon Appellants' disclosure and problem solution, and upon the Examiner's speculative reliance upon the skill in the art to assert that such a substitution would be obvious.

It is impermissible within the framework of 35 U.S.C. §103 to pick and choose from any one reference only so much of it as will support a given position to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one skilled in the art.³ Further in this regard, As the Court of Customs and Patent Appeals, predecessor to the Federal Circuit, has held:

All relevant teachings of cited references must be considered in determining what they fairly teach to one having ordinary skill in the art. The relevant portions of a reference include not only those teachings which would suggest particular aspects of an invention to one having ordinary skill in the art, but also those teachings which would lead such a person away from the claimed invention.⁴

² *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) and See MPEP §2143.

³ *Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc.*, 230 USPQ 416 (Fed. Cir. 1986).

⁴ *In re Mercier*, 185 USPQ 774, 778 (CCPA 1975).

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The rejections in the Official Action amount, in substance, to nothing more than hindsight reconstruction of Appellants' invention by relying on isolated teachings of the applied art, without considering the overall context within which those teachings are presented. Without benefit of Appellants' disclosure, a person having ordinary skill in the art would not know what portions of [Sechi] to consider, and what portions to disregard as irrelevant or misleading.⁵

The Examiner continues to impermissibly read the means plus function limitation relating to "FET means *for amplifying the AM broadcast signal and reducing a flicker noise level in the amplifier below an N-MOS transistor equivalent flicker noise*" onto Sechi.

"There are three possible sources for a motivation to combine [or modify] references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art."⁶ Further with regard to the level of skill of practitioners in the art, there is nothing in the statutes or the case law which makes "that which is within the capabilities of one skilled in the art" synonymous with obviousness.⁷ The level of skill in the art cannot be relied upon to provide the suggestion to combine references.⁸

This is particularly relevant to the Examiner's assertion that "[i]t requires only routine skill in the art to replace the bipolar transistors with the p-type MOSFETs," a statement with which Appellants respectfully disagree.

Appellants reiterate that a person with skill in the art would not be motivated to look to Sechi to solve the flicker noise problems at AM broadcast frequencies addressed by Appellants' claimed invention. As discussed above, Sechi is silent on any solution to flicker noise problems, as this physical phenomenon is not present at the gigahertz frequency ranges involved in Sechi.

With respect to the Examiner's assertion that Sechi reduces noise of the amplifiers, Appellants' FIG. 3 showing flicker noise ("1/f" noise) is reproduced below, with a typical

⁵ *In re Wesslau*, 147 USPQ 391, 393 (CCPA 1965).

⁶ See MPEP §2143.01, citing *In re Rouffet*, 149 F.3d, 1350, 1357, 47 USPQ2d 1453, 1457-8 (Fed. Cir. 1998).

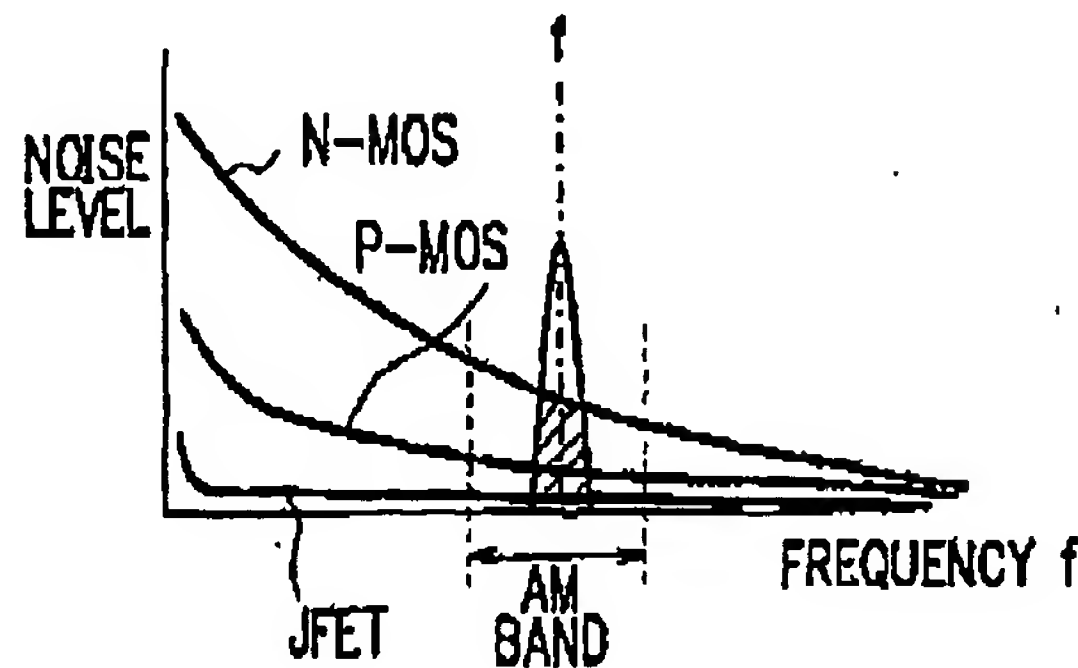
⁷ *Ex parte Gerlach and Woerner*, 212 USPQ 471 (PTO Bd. App. 1980).

⁸ See MPEP §2143.01, citing *Al-Site Corp. v. VSI Int'l Inc.*, 50 USPQ2d 1161 (Fed. Cir. 1999).

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bandpass filter characteristic such as provided by Sechi (resonator circuit 32) superimposed in the AM band.



As can clearly be seen from the excerpt from FIG. 3, above, the bandpass filter of Sechi, if operated in the AM band, blocks noise outside of the passband (as would be expected for any bandpass filter), and passes/amplifies the flicker noise component within the passband. It is the *signal plus noise* within the passband which is of interest in both Sechi and Appellants' disclosure. If applied in the AM band, *Sechi clearly does not reduce any flicker noise within the band, but rather amplifies any flicker noise that is present within the band.*

In contrast, Appellants' disclosed and claimed invention makes it possible, by use of P-MOSFETs, to reduce flicker noise in a frequency band, even when otherwise within the passband of the bandpass filter.

As can be seen from the above figure, JFET amplifiers offer better flicker noise performance. However, JFETs do not integrate well with MOS fabrication, if at all, as discussed in the present specification.

Appellants have opted for easier MOS-type fabrication, thus leaving P-MOS transistors as the better choice for the AM band to reduce flicker noise over JFETs or N-MOS, if manufacturability is considered in the context of flicker noise reduction, as Appellants have done. For example, manufacturability issues including the preference for P-MOS over JFETs (and N-MOS) are discussed in the specification at least at ¶¶ [0012], [0020], [0031], and [0038].

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Further, as discussed above, Sechi is stated as being operated at gigahertz frequencies, which are along the far right-hand side of the frequency axis, at or beyond the point along the frequency axis that the flicker noise levels of all three amplifying approaches (N-MOS, P-MOS, and JFET) converge and approach "0" flicker noise, supporting Appellants' contention that Sechi need not be concerned with flicker noise.

D. The Examiner's has not Established a *Prima Facie* Case of Unpatentability

The Examiner's modification to Sechi appears to be a *broad, conclusory inference*, as there appears to be no support for the alleged motivation in the single reference, Sechi. At least two cases by the Federal Circuit support Appellants' position.⁹ Both of these cases set forth very rigorous requirements for establishing a *prima facie* case of obviousness under 35 U.S.C. § 103(a).

Specifically, it appears that the Examiner has made a broad conclusory statement in his alleged motivation "because such a modification would have been considered a mere substitution of art-recognized equivalent transistors" that are not supported by evidence from Sechi or from the Examiner's knowledge of skill in the art. The motivation, suggestion or teaching may come explicitly from statements in the prior art, the knowledge of one of ordinary skill in the art or, in some cases, the nature of the problem to be solved.¹⁰

Further, the teaching, motivation or suggestion may be implicit from the prior art as a whole, rather than expressly stated in the references.¹¹ Whether the Board of Appeals relies on an express or an implicit showing, it must provide particular findings related thereto.¹² Broad conclusory statements, such as stated by the Examiner in the Office Action, standing alone are not "evidence."

In setting forth the asserted motivation to modify Sechi as suggested by the Examiner,¹³ the Examiner stated that "[i]t would have been obvious to one of ordinary skill in the art at the

⁹ *In re Dembiczak*, 50 USPQ2d 1646 (Fed. Cir. 1999), and *In re Kotzab*, 55 USPQ2d 1313 (Fed. Cir. 2000).

¹⁰ *Dembiczak* at 1614.

¹¹ *WMS Gaming, Inc. v. International Game Tech.*, 1851 USPQ2d 1385, 1397 (Fed. Cir. 1999).

¹² *Dembiczak* at 1617.

¹³ See Official Action mailed June 17, 2004 at p. 3.

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time the invention was made to have substituted well known art-recognized equivalent transistors such as the p-type FETs in place of the n-type bipolar transistors in . . . Sechi (Fig. 3) because such a modification would have been considered a mere substitution of art-recognized equivalent transistors.”¹⁴

Appellants respectfully submit that the Examiner’s assertion that p-type FETs and NPN bipolar junction transistors are necessarily “art equivalent” devices is clearly technically incorrect, at least in the particular application that Appellants’ claimed invention is involved.

In the instant application and in RF amplifier and solid state circuit design in particular, n-channel MOSFETS and p-channel MOSFETS are recognized as possessing different operating characteristics, which can be particularly noteworthy and important as a function of operating frequency. Moreover, FETs and bipolar junction transistors (BJTs) are even more differentiated devices, with FETs being voltage controlled, and BJTs being current controlled; each having their relative advantages and disadvantages, depending on the particular application. Therefore, FET devices, due to their characteristics, may be more appropriate in certain applications, and BJT devices may be more appropriate for other applications, based upon their particular characteristics.

Thus, Applicant traverses the Examiner’s unfounded assertion that it would have been obvious “to have substituted well known art-recognized equivalent transistors such as the p-type FETs in place of the n-type bipolar transistors in the circuit of Sechi (Fig. 3) because such a modification would have been considered a mere substitution of art-recognized equivalent transistors.” Applicants assert that substitution of FETs as a mere substitution of an art-recognized equivalent to an NPN BJT is unreasonable, particularly at RF frequencies, and even more particularly with respect to AM broadcast frequencies, as in the limitations of claim 1, and as further discussed in Applicant’s disclosure with respect to the different operating characteristics of different devices.

¹⁴ See Official Action at p. 3, 3rd paragraph.

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VIII. CONCLUSION

Accordingly, as the Examiner has not made a *prima facie* case of unpatentability, reversal of the rejections and allowance of pending claims 1-4 by the Honorable Board are respectfully requested.

A copy of the claims involved in the present appeal is attached hereto as Appendix A. As indicated above, the claims in Appendix A have not been amended during prosecution of this application.

Respectfully submitted,

By Larry J. Hume
Larry J. Hume

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Application No.: 10/708,339

Docket No.: 22040-00016-US2

APPENDIX A

Claims Involved in the Appeal of Application Serial No. 10/708,339

1. An amplifier circuit suitable for amplifying an AM broadcast signal, the circuit comprising:
FET means for amplifying the AM broadcast signal and reducing a flicker noise level in the amplifier below an N-MOS transistor equivalent flicker noise; and
a tuning circuit operatively connected between the FET means and an output node of the amplifier circuit.
2. The amplifier circuit of claim 1, wherein said FET means comprises two cascode-coupled P-MOS transistors.
3. The amplifier circuit of claim 1, wherein said FET means comprises two cascode-coupled P-MOS transistors which receive, respectively, the AM broadcast signal and an AGC voltage.
4. The amplifier circuit of claim 1, further comprising a DC-blocking capacitor, wherein the AM broadcast signal is coupled through the DC-blocking capacitor to the FET means at a gate of a P-MOS transistor contained therein.